

WHAT IS CLAIMED IS:

1. A circuit modification method of modifying a circuit by inserting one or more buffers into a predetermined wire located within the circuit, the method comprising the steps of:
- determining whether a glitch error is caused in said predetermined wire by one or more aggressors each comprised of one or more other wires;
- when determining that a glitch error is caused in said predetermined wire by one or more aggressors, determining one or more positions where one or more buffers are to be inserted into said predetermined wire based on a coupling capacity between each of said one or more aggressors and said predetermined wire.
2. The circuit modification method according to Claim 1, wherein said insertion position determining step includes the steps of, when determining that a glitch error is caused in said predetermined wire by only one aggressor, calculating a target coupling capacity using the coupling capacity between said aggressor and said predetermined wire, and, when dividing said predetermined wire into a plurality of wire segments, determining one or more internal points of division of said predetermined wire so that a coupling capacity between each of said plurality of wire segments and said aggressor does not exceed said target coupling capacity, and setting said one or more internal points of division to said one or more positions where said one or more buffers are to be inserted into said

predetermined wire.

3. The circuit modification method according to Claim
2, wherein said target coupling capacity calculating step
5 is the step of calculating said target coupling capacity by
using an amount of glitch to be caused in said
predetermined wire by said aggressor.

4. The circuit modification method according to Claim
10 3, wherein said target coupling capacity calculating step
includes the steps of determining the number of said
plurality of wire segments based on said amount of glitch,
and calculating said target coupling capacity based on said
coupling capacity between said aggressor and said
15 predetermined wire and the number of said plurality
determined in the above step.

5. The circuit modification method according to Claim
4, wherein said wire segment number determining step is the
20 step of, when the coupling capacity between said aggressor
and said predetermined wire is C_c , said amount of glitch is
 V , and a predetermined value is V_{max} , determining the
smallest integer number n which satisfies a following
relationship: $V/n \leq V_{max}$ as the number of said plurality of
25 wire segments, and wherein said target coupling capacity
calculating step is the step of calculating said target
coupling capacity as follows: C_c/n , and said internal
division point determining step is the step of determining
said one or more internal points of division so that the
30 coupling capacity between each of said plurality of wire

segment and said aggressor is equal to said target coupling capacity C_c/n .

6. The circuit modification method according to Claim 3, wherein said target coupling capacity calculating step is the step of, when the coupling capacity between said aggressor and said predetermined wire is C_c , said amount of glitch is V , and a predetermined value is V_{max} , calculating said target coupling capacity as follows: $C_c \cdot V_{max}/V$.

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7. The circuit modification method according to Claim 1, wherein said one or more buffers to be inserted into said predetermined wire have a driving ability equal to or greater than that of a driving circuit for driving said predetermined wire.

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8. The circuit modification method according to Claim 7, further comprising the step of selecting a type of buffer having a driving ability equal to or greater than that of said driving circuit for driving said predetermined wire and having a minimum area as each of said one or more buffers to be inserted into said predetermined wire from among a plurality of buffer cells stored in a cell library.

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9. The circuit modification method according to Claim 1, further comprising the steps of, when determining that a glitch error is caused in said predetermined wire by one or more aggressors, replacing a driving circuit for driving said predetermined wire with another one having a higher driving ability than the driving circuit, and, before

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performing said insertion position determining step,
determining whether a glitch error is caused in said
predetermined wire driven by the other driving circuit by
said one or more aggressors.

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10. The circuit modification method according to
Claim 1, wherein said insertion position determining step
includes the steps of, when determining that a glitch error
is caused in said predetermined wire by a plurality of
10 aggressors, calculating a plurality of target coupling
capacities respectively associated with said plurality of
aggressors by using the coupling capacity between each of
said plurality of aggressors and said predetermined wire,
and, when dividing said predetermined wire into a plurality
15 of wire segments, determining one or more internal points
of division of said predetermined wire so that a coupling
capacity between each of said plurality of wire segments
and each of said plurality of aggressors does not exceed a
corresponding one of said plurality of target coupling
20 capacities, and setting said one or more internal points of
division to said one or more positions where said one or
more buffers are to be inserted into said predetermined
wire.

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11. The circuit modification method according to
Claim 10, wherein said target coupling capacity calculating
step includes the steps of, when the coupling capacity
between each of said plurality of aggressors (referred to
as i th ($i=1$ to k , k is the number of aggressors) aggressor
30 hereafter) and said predetermined wire is Cc_i ($i=1$ to k),

an amount of glitch to be caused in said predetermined wire by the i th aggressor is V_i ($i=1$ to k), and a predetermined value is V_{\max} , determining the smallest integer number n_i ($i=1$ to k) which satisfies a following relationship:

- 5 $V_i/n_i \leq V_{\max}$ ($i=1$ to k) as the number of said plurality of wire segments for each of said plurality of aggressors, and calculating each of said plurality of target coupling capacities as follows: C_{ci}/n_i ($i=1$ to k).

- 10 12. The circuit modification method according to Claim 10, wherein said insertion position determining step includes the steps of when dividing said predetermined wire into a plurality of wire segments for each of said plurality of aggressors, determining said one or more
15 internal points of division of said predetermined wire so that the coupling capacity between each of said plurality of wire segment and each of said plurality of aggressor is equal to said corresponding target coupling capacity, and selecting said one or more positions where one or more
20 buffers to be inserted into said predetermined wire from among all internal points of division determined in the above step for said plurality of aggressors.

13. The circuit modification method according to
25 Claim 11, wherein said insertion position determining step includes the steps of when dividing said predetermined wire into a plurality of wire segments for each of said plurality of aggressors, i.e., said i th aggressor, determining said one or more internal points of division of
30 said predetermined wire so that the coupling capacity

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between each of said plurality of wire segment and said i th aggressor is equal to said corresponding target coupling capacity Cc_i/n_i ($i=1$ to k), and selecting said one or more positions where one or more buffers to be inserted into
 5 said predetermined wire from among all internal points of division determined in the above step for said plurality of aggressors.

14. The circuit modification method according to
 10 Claim 10, wherein said target coupling capacity calculating step includes the steps of, when the coupling capacity between each of said plurality of aggressors (referred to as i th ($i=1$ to k , k is the number of aggressors) aggressor hereafter) and said predetermined wire is Cc_i ($i=1$ to k),
 15 an amount of glitch to be caused in said predetermined wire by said i th aggressor is V_i ($i=1$ to k), and a predetermined value is V_{max} , calculating each of said plurality of target coupling capacities as follows: $Cc_i \cdot V_{max}/V_i$ ($i=1$ to k).

20 15. A circuit modification method of modifying a circuit by inserting one or more buffers into a predetermined wire located within the circuit, the method comprising the steps of:

determining whether a glitch error is caused in said
 25 predetermined wire by an aggressor comprised of one or more other wires;

when determining that a glitch error is caused in said predetermined wire by an aggressor, determining a number of buffers to be inserted into said predetermined
 30 wire based on an amount of glitch to be caused in said

predetermined wire by said aggressor.

16. The circuit modification method according to Claim 15, wherein said buffer number determining step is
5 the step of, when said amount of glitch is V and a predetermined value is V_{max} , calculating the smallest integer number n which satisfies a following relationship:
 $V/n \leq V_{max}$.

10 17. The circuit modification method according to Claim 15, wherein said one or more buffers to be inserted into said predetermined wire have a driving ability equal to or greater than that of a driving circuit for driving said predetermined wire.

15 18. The circuit modification method according to Claim 17, further comprising the step of selecting a type of buffer having a driving ability equal to or greater than that of said driving circuit for driving said predetermined
20 wire and having a minimum area as each of said one or more buffers to be inserted into said predetermined wire from among a plurality of buffer cells stored in a cell library.

19. The circuit modification method according to
25 Claim 15, further comprising the steps of, when determining that a glitch error is caused in said predetermined wire by one aggressor, replacing a driving circuit for driving said predetermined wire with another one having a higher driving ability than the driving circuit, and, before performing
30 said buffer number determining step, determining whether a

glitch error is caused in said predetermined wire driven by the other driving circuit by said one aggressor.

20. A circuit modification method comprising the
5 steps of:

determining whether a glitch error is caused in said predetermined wire by an aggressor comprised of one or more other wires;

when determining that a glitch error is caused in
10 said predetermined wire by an aggressor, replacing a driving circuit for driving said predetermined wire with another one having a higher driving ability than the driving circuit.

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